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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/945,002	08/31/2001	Paul W. Dent	4015-980	1823
24112	7590	11/01/2005	EXAMINER	
COATS & BENNETT, PLLC P O BOX 5 RALEIGH, NC 27602			BURD, KEVIN MICHAEL	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/945,002

Applicant(s)

DENT, PAUL W.

Examiner

Kevin M. Burd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,10-17,19,27-32,34 and 39-41 is/are rejected.
- 7) ☒ Claim(s) 3-9,18,20-26,33 and 35-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Response to Arguments***

1. Applicant's arguments with respect to claims 10-12, 28-30 and 39-41 have been fully considered and are persuasive. The rejection of these claims is withdrawn.
2. Applicant's arguments with respect to claims 1, 13-17, 19, 27, 31, 32 and 34 have been considered but are moot in view of the new grounds of rejection stated below. A new rejection for claims 10-12, 28-30 and 39-41 is also stated below.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 10, 11, 13-17, 19, 27-29, 31, 32, 34, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bottomley (US 5,822,380) in view of Jurgensen et al (US 6,862,314).

Regarding claims 1, 2, 13-17, 19, 27, 31 and 32, Bottomley discloses a system and method for processing received signals. Signals from multiple users are received in the base band processor shown in figures 2 and 3. Channel estimates are determined in the channel estimator 30 in figure 3. Impairment correlator 32 determines the interference correlation between the first and second received signal from the mobile terminals. Filter coefficients of an interference suppression filter/matrix based on the

channel estimates and the interference correlation are computed (column 5, lines 59-67). The first and second received signals are combined in the coherent detector 25 and a combined output is generated. Bottomley further discloses the present invention can be used in a direct sequence CDMA system to improve estimation of RAKE tap coefficients (column 10, lines 60-64). Bottomley does not disclose the specifics of the RAKE receiver used to receive the combined signal and to despread the received signal into separate user signals. Jurgensen discloses RAKE receivers that receive a combined signal, despread the signal and obtain a plurality of user signals as shown in figures 7 and 8. It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the RAKE receiver of Jurgensen as the RAKE receiver discussed by Bottomley to provide a higher data rate service on the link (Jurgensen, abstract).

Regarding claims 10, 11, 28, 29, 34, 39 and 40, Bottomley discloses the coherent detector 24 receives the complex sample streams from the radio units and the detector may be implemented by a multi-antenna MLSE equalizer (column 5, lines 16-19).

4. Claims 12, 30 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bottomley (US 5,822,380) in view of Jurgensen et al (US 6,862,314) further in view of Turner (US 5,561,687).

Regarding claims 12, 30 and 41, the method and system of the combination of Bottomley and Jurgensen is disclosed above in paragraph 3. The combination does not

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disclose using a whitening filter ahead of the equalizer. Turner discloses a noise-whitening filter 7 for whitening the noise spectrum present in the incoming signal sequence and to reshape the received signal (column 1, lines 34-37). The whitening filter is ahead of the equalizer (figure 1). It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the whitening filter of Turner in the combination of Bottomley and Jurgensen. The whitening filter allows noise to be removed in the incoming signal and the transmitted signal to be recovered correctly in the receiver.

### ***Allowable Subject Matter***

Claims 3-9, 18, 20-26, 33 and 35-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art stated above does not disclose wherein the computing the filter coefficients based on the interference matrix comprises computing the adjoint or inverse of the matrix ( $A^H A$ ) where  $A^H$  means "time-reversed conjugate transpose of A" as stated in claims 3-8, 18, 20-26, 33 and 35-38.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin M. Burd  
10/27/2005

  
**KEVIN BURD**  
**PRIMARY EXAMINER**